

AMENDMENT TO THE CLAIMS

Claims 1-15 (Cancelled)

16.**(New)** A system for prediction and treatment of all kinds of slugs being formed in a flow line (20) system or wellbore tubing transporting a multiphase fluid towards a downstream process including at least one separator or slug catcher (8) at said process inlet, wherein said system comprises:

a slug detector (1) dedicated to detect any incoming slug which is located between the point of slug initiation and said process inlet,

a computer unit (4) connected to said detector (1) and either a multiphase flow meter (5) or a fluid velocity meter located upstream an inlet choke (19) in said flow line (20) system, and where said unit (4) includes software which based on signals from said slug detector (1) in combination with signals from either said meter (5) or fluid velocity meter determines the nature of said slug and estimates its volume and its arrival time to said process,

instruments connected to said computer unit (4) continuously monitoring pressure and liquid levels in said separator or slug catcher,

at least one device connected to said separator or slug catcher which receives signals from said computer unit (4) to regulate the pressure and/or

liquid level in said separator or slug catcher so that process perturbations due to incoming slugs are reduced to a minimum through said process.

17.**(New)** A system according to claim 16, wherein said instruments comprise at least one liquid level transmitter (9,11,18) and/or at least one pressure transmitter (3,16) mounted to said separator or slug catcher.

18.**(New)** A system according to claim 16, wherein said device comprises at least one valve (6,7,12,17) and/or at least one compressor (14) and/or at least one pump (15).

19.**(New)** A system according to claim 16, wherein said slug detector (1) comprises instruments in said flow line (20) for measuring flowing pressure, fluid mixture density and at least gas void fraction or water cut or local hold-up.

20.**(New)** A system according to claim 16, wherein the distance (2) from the slug detector (1) to the downstream process equipment is for every new implementation optimized with respect to slug treatment capabilities of said process and the parameter settings of all regulating devices being controlled by said computer unit (4).

21.**(New)** A system according to claim 16, wherein the optimum location for said detector (1) could either be in said flow line (20) some distance (2) upstream of said process or within a riser (13).

22.**(New)** A system according to claim 16, wherein the computer unit (4) includes three options for defining the fluid velocities; by manual input, by on-line registration using clamp-on fluid velocity meter or by including an on-line transient simulator in combination with a multiphase meter (5) at the flow line outlet.

23.**(New)** A system according to claim 16, wherein the computer unit (4) integrates said flow line system (20) and said downstream process by adjusting the pressure and liquid level regulating devices based on arrival slug information.

24.**(New)** A system according to claim 16, wherein the computer unit (4) comprises override functions that override or suppress the slug control regulation of the downstream process if the trip levels of the separators are approached.

25.**(New)** A method for prediction and treatment of all kinds of slugs being formed in a flow line (20) system or wellbore tubing transporting a multiphase fluid towards a downstream process including at least one separator or slug catcher (8) at said process inlet, wherein said method comprises the following steps:

said slug is detected between the point for slug initiation in said flow line (20) and said process inlet by means of a slug detector (1), the nature of said slug is determined by means of a computer unit (4) continuously receiving signals from said slug detector (1) in combination with either a fluid velocity meter or a multiphase flow meter (5) located upstream of an inlet choke (19) in said process,

the volume of said slug and its arrival time to said process are estimated by said computer unit (4),

pressures and liquid levels in said separator or slug catcher are monitored by said computer unit (4) by means of instruments (3,9,11,16,18) mounted to said separator or slug catcher,

said computer unit (4) gives signals to at least one device (6,7,12,14,15,17) connected to said separator or slug catcher to regulate the pressure and/or liquid level in said separator or slug catcher so that process perturbations due to incoming slugs are reduced to a minimum through said process.

26.**(New)** A method according to claim 25, wherein said slug detector records continuously flowing pressure, fluid mixture density and at least gas void fraction or water cut or local hold-up.

27.**(New)** A method according to claim 25, wherein said pressure and/or liquid levels are regulated by means of at least one valve (6,7,12,17) and/or at least one compressor (14) and/or at least one pump (15) connected to said separator or slug catcher.

28.**(New)** A method according to claim 25, wherein said pressure regulation is achieved by adjusting choke opening of at least one gas outlet valve (6,17) or by adjusting the speed of a downstream compressor (14).

29.**(New)** A method according to claim 25, wherein said liquid level regulation is achieved by adjusting choke opening of at least one liquid outlet valve (7,12) or by adjusting the speed of a down-stream pump (15).

30.**(New)** A method according to claim 25, wherein the flow rate in said flow line is adjusted by means of said inlet choke (19).